

APPENDIX 2

MARKED UP SPECIFICATION

The subject of ~~[[an]]~~ the invention is a method for utilization of rubber wastes with simultaneous ~~carrying~~ performance of pyrolysis of coking coal, particularly compositions of various coking coals in the cells of a coke oven battery.

Hitherto, rubber wastes in ~~[[a]]~~ the form of ~~[[the]]~~ used rubber products such as car tires, tubes, conveyor belts, hoses, etc., are subjected in a limited range to ~~[[the]]~~ mechanical manufacturing to obtain so called "grinding product". However, a remarkable majority of rubber wastes is directed to waste dumps or it is burned in the opened air, ~~in an~~ with access ~~[[of]]~~ to oxygen in ~~[[a]]~~ waste combustion plants or in a rotary furnaces in cement factories.

~~Carrying of such an~~ Such utilization of rubber wastes causes ~~[[a]]~~ contamination and degradation of the natural environment and a ~~[[lost]]~~ loss of valuable ~~components~~ materials, which can be reused for production of rubber articles ~~production~~.

The method according to the invention for utilization of rubber wastes with a simultaneous ~~carrying~~ performance of coking coal pyrolysis, ~~comprising~~ including filling of ~~consequent~~ cells of a coke oven battery with a charge of a previously prepared and disintegrated blend of coking coals according to the invention is characterized in~~[[,]]~~ that to each charge of the blend of coking coals of a size of particles ~~[[0,1 - 5,0]]~~ 0.1 – 5.0 mm in an amount of 95 - 99% by weight, a rubber granulate is added in ~~[[a]]~~ the form of a rubber grain of a size of particles ~~[[0,1 - 5,0]]~~ 0.1 – 5.0 mm in an amount of 1 - 5% by weight, in coking plants with a ~~compacted~~ compacting system ~~[[of]]~~ for filling the cells.

In ~~[[coke]]~~ the coking plants with a gravitational charge filling system, the preferable size of particles is between ~~[[0,1 - 20,0]]~~ 0.1 and 20.0 mm. Formed in this way, a mixture of the coking coals ~~[[charge]]~~ and the rubber grain is thickened by mechanical compacting ~~till an~~ until a uniform structure of a whole charge is obtained. A process for utilization of rubber wastes is carried out in a closed system without ~~[[an]]~~ access ~~[[of]]~~ to oxygen, at ~~[[the]]~~ a temperature of at least 900 °C with a simultaneous pyrolysis of coal.

~~The advantage of an~~ The invention is a remarkable ~~remarkably decreases the an~~ emission of harmful ~~products materials, formed hitherto as a result of~~ produced by the conventional method that performs a combustion of rubber wastes, ~~which was carried out with~~ ~~[[an]]~~ access ~~[[of]]~~ to oxygen in ~~opened~~ open systems~~[[,]]~~. The invention further ~~[[a]]~~ decreases ~~[[of]]~~ contamination and degradation of ~~[[a]]~~ the natural environment, and ~~an elimination of~~ eliminates wastes, ~~and, moreover,~~ Moreover, the invention a recovery of enables a recovery of carbon derivatives, which can be reused directly for production of rubber articles in a chemical industry, ~~including rubber articles production.~~

EXAMPLE 1

A blend of coking coals is prepared and disintegrated in a ball grinder provided with an appropriate sieves to obtain ~~[[the]]~~ a grain size of 1 - 5 mm. The above-mentioned blend of coals is placed in an amount of ~~[[14.850]]~~ 14,850 kg in one cell of ~~[[the]]~~ a coke oven battery. Then, 150 kg of rubber grain of ~~the particles~~ particle size 5 mm ~~[[are]]~~ is added to the coal blend already placed in a coke oven battery cell. The composition of ~~[[coke]]~~ the coking coals and the rubber grain is compacted

mechanically to obtain a homogenous structure of ~~all the~~ a whole charge. In the same way, filling of other cells of ~~[[a]] the~~ coke oven battery is performed, using siloes containing previously prepared and disintegrated ~~[[coke]] coking~~ coals composition and rubber grain.

After filling ~~[[of]] the cells,~~ is completed a process for utilization of rubber wastes is ~~carried~~ performed in a closed system without ~~[[an]] access~~ [[of]] to oxygen, without forming wastes, in a temperature of 900 °C, with a simultaneous pyrolysis of coal.

When finished, a process for utilization of rubber wastes ~~from~~ performed in each cell of ~~[[a]] the~~ coke oven battery yields ~~[[with]]:~~ coke in an amount of ~~[[11.400]]~~ 11,400 kg, ammonia ~~[[--]] in an amount of~~ [[35,25]] 35.25 kg, benzene ~~[[--]] in an amount of~~ 183 kg, tar ~~[[--]] in an amount of~~ [[745,5]] 745.5 kg, coke oven gas ~~[[--]] in an amount of~~ [[5.034]] 5,034 Nm.

EXAMPLE 2

Proceeding as shown in Example 1, each cell of a coke oven battery ~~cell was~~ is filled with ~~a coal composition~~ coking coals in an amount of ~~[[14.550]]~~ 14,550 kg and rubber grain in an amount of 450 kg.

After a process for utilization of rubber wastes is completed, the following products are obtained from each cell: coke in an amount of ~~[[11.460]]~~ 11,460 kg, ammonia ~~[[--]] in an amount of~~ [[35,25]] 35.25 kg, benzene ~~[[--]] in an amount of~~ 183 kg, tar ~~[[--]] in an amount of~~ [[745,5]] 745.5 kg, coke oven gas ~~[[--]] in an amount of~~ [[5.043]] 5,043 Nm.

As ~~[[it]]~~ can be concluded from the above examples, depending on the ratio of coking coals and rubber grain ~~and a coal blend~~, the process for utilization of rubber

wastes with a simultaneous pyrolysis of coal, yields, ~~according to the needs, with~~
~~controlled,~~ various amounts of products, and can control the amounts of products
according to needs.